

new
dimensions
in

TIME

I nfotronic
S ystems
I nc.

an affiliate of
GOTHAM AUDIO CORPORATION
2 West 46th Street
New York, New York 10036
(212) CO 5-4111

INFOTRONIC SYSTEMS INC.

**DEMONSTRATION OF COMPRESSED AND
EXPANDED SPEECH FOR EDUCATION**

GAC 772766-B

33 1/3 RPM

using the

ELTRO INFORMATION RATE CHANGER MARK II

1966

It is virtually impossible to demonstrate the effectiveness of the Eltro Information Rate Changer through the use of text alone. Infotronic Systems Inc. is pleased to enclose the above demonstration disc which should indicate unambiguously the effectiveness of rate changing and suggest possible applications. The disc is recorded at 33 $\frac{1}{3}$ rpm and can be played on any record player equipped for 33 $\frac{1}{3}$ rpm use.

INFOTRONIC SYSTEMS INC.

Address By

LEE C. DEIGHTON, Ch. of the Board
The MacMillan Co. New York

GAC 772766-A

33 1/3 RPM

Original Delivery Time: 12' 25'
Compressed Time: 8' 16'
Processed through the
ELTRO INFORMATION
RATE CHANGER MARK II
1966

INSTRUCTIONS FOR COMPRESSION AND/OR EXPANSION OF RECORDED MATERIAL

Ordering agency: Person to contact _____
Institution _____
Address _____

Zip _____
Phone number (_____) _____

TO: INFOTRONIC SYSTEMS INC., 2 West 46th St., New York, N.Y. 10036. (212) 265-4111

You are herewith authorized to perform the following work in compressing and/or expanding the material on the enclosed reel(s) of tape:

- 1) Number of original reels of tape _____ Reel size _____
- 2) Total timing of original material _____
- 3) Original tapes recorded at () 15 ips () 7-1/2 ips () full track () half track
- 4) Original tapes recorded on (make and model of recorder) _____
- 5a) We enclose _____ reels of blank tape for your use with our material.
- 5b) We request that you supply the tape ().
- 6) We would like the final recording at () 15 ips () 7-1/2 ips
- 7) Please transform the material as follows:
Reel 1: expand/compress to _____ % of the original timing.
Reel 2: expand/compress to _____ % of the original timing.
Reel 3: expand/compress to _____ % of the original timing.
Reel 4: expand/compress to _____ % of the original timing.
We request that you use your own judgment (compression only) ().
- 8) We have a deadline for return of this material. It must reach us by _____
(NOTE: Unless otherwise indicated, 2-3 weeks are required for processing.)
- 9) Return our original and copies via () mail () airmail () best way
We understand that we may return any unsatisfactory material with a full explanation, and you will refund or credit us for any payments made.

RATES FOR COMPRESSING OR EXPANDING MATERIAL:

<u>TIME (FINISHED)</u>	<u>ORIGINAL AT 15 IPS</u>	<u>ORIGINAL AT 7-1/2 IPS</u>
Up to 10 minutes	free of charge	free of charge
Up to 30 minutes	\$ 8.00	\$ 12.00
Up to one hour	12.00	18.00
Each add'l hour or fraction	10.00	15.00

The Problem



Marshal McLuhan refers to this as an era of "Information overload".

Time has become a dramatic problem confronting industry, government, educators. The staggering quantities of information that must be transmitted and absorbed daily—the increased costs of communicating such information—the lack of time available to acquire such information and stay abreast of essential information have all constituted a seemingly insolvable problem.

The nature of this problem is widely recognized and an abundance of tools and methods have been devised to cope with it. However, virtually every approach has related to the more scientific selection of content and to more effective means of presentation—with or without a "system"; with or without the use of programmed instruction as a method or methodology.

But every approach to solving the problem has relied upon basically conventional communications technology. No revolutionary means for breaking the information and time barriers had yet been developed. Until the present.

As a result of a fundamental breakthrough, relating to a totally new communications principle as well as superb engineering skills, INFOTRONIC SYSTEMS INC. has been able to devise, design, test and execute a wide range of total Information Transmissal Systems which do, in fact, provide a most important and successful means of breaking the information and time barriers. The following pages describe this breakthrough.



The Answer

Basically, there are only two ways to transmit information—by way of visual media or by audio communication.

Despite speed-reading courses, there is a limit to the amount of information that can be *read* in any given period of time. There is a fatigue factor due to muscle strain which imposes time limitations on speed reading. In addition, it is somewhat impractical to expect a sizable percentage of the affected publics to find the time for such training, or to achieve more than a small increase in reading speed.

Verbal Communication has many advantages. Experimental evidence has long established that it is possible to hear and fully comprehend at considerable rates of speed—rates far beyond reading abilities and comprehension. In 1965, a study by Orr, Friedman and Williams of the American Institutes for Research presented to the American Psychological Association found that “where 80% or better of normal speed comprehension is acceptable, even naive listeners can tolerate close to twice normal presentation speeds. Further, the results show that with 8-10 hours of training, substantially high speeds are possible.” This is merely one of a number of recent studies indicating that the important new frontier of information transmissal lies in aural communication. The potential of aural perception as an efficient receiver of information substantially exceeds our ability to communicate aurally efficiently and effectively. We are able to hear better and faster than we can talk.

It would seem obvious, therefore, that if communications in general and information transmissal in particular were to be significantly speeded up, the proper direction would lie in recorded rather than printed media—in the use of the ear rather than the eye wherever possible.

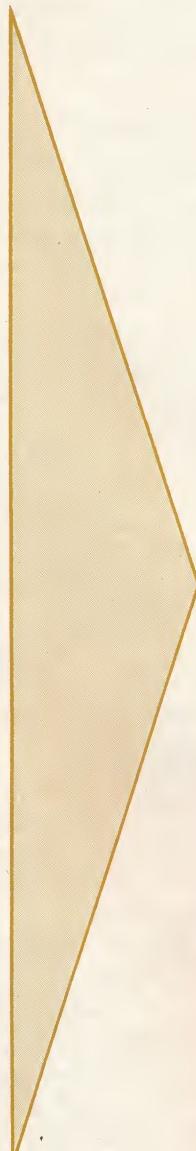
But how do you speed up recorded communications? Faster delivery is obviously not the answer because intelligibility suffers. Recorded tape messages could be compressed by taking a pair of scissors and carefully cutting out all the fragments of silence between words and syllables. This has been done in the laboratory to test the ability of listeners to comprehend compressed material with good results. But it is a time consuming process—and from the standpoint of practical daily use—totally unfeasible.

Ideally, if there were a way of speeding up the playback of recorded material, the problem would be solved. But when recorded material is speeded up (or slowed down), whether on records or tape, the pitch of the speaker's voice changes. Even a small change in speed affects pitch, and consequently, intelligibility.

The engineering problems have been solved. Their solution has led to a series of information transmissal systems which now make possible dramatic savings of time and money and the first major improvement in general communications since the development of recording tape itself.



The Heart of the System



Infotronic Systems Inc. and the engineering, design and manufacturing staffs of Eltro Automation, Heidelberg, West Germany, have developed the **Eltro Information Rate Changer**. This unique instrument makes it possible—for the first time—to increase the playback speed of any taped material (up to nearly twice the normal speed)—without changing either the pitch, the volume level or the fidelity of the recording.

As a result, the heart of a system now exists which makes it possible for the first time to:

- Speed up the transmission and communication of information by as much as 100% without any loss of intelligibility (in fact, university research establishes increased intelligibility when speed-up occurs).
- Effect savings of time amounting to nearly 100% in communications.
- Reduce by nearly 100% the cost of long distance calls where the telephone is or should be the primary communications medium.
- Create totally new, efficient, high impact information systems for industry, the educational plant and institutional groups; systems able to provide and solicit information, achieve appreciable savings in time and costs, replace expensive, unwieldy and outmoded means of providing informational services.
- Innovate in communications technology and devise new and more effective means of improving learning, and comprehension, retention and motivation.

Infotronic Systems

The implications of the Eltro Information Rate Changer were so new and so broad that Infotronic Systems recognized a prime responsibility for the development of total systems—inclusive of hardware and methodology—to exactly apply the potential benefits of the Eltro device to the precise needs of potential users.

For two years, experts and authorities in communications technology, audio engineering and system design and development have been devising a preliminary group of systems exactly tailored to more obvious information transmissal needs.

As a result, Infotronic Systems is now in a position to provide total hardware complements, use-systems, and variations of same to fit the precise needs of a wide range of users. In addition, system development is an on-going process constantly expanding and improving on presumed limits of information transmissal.

Speech expansion or compression is accomplished by the electro-mechanical processing of ordinary tape recorded material. Its result sounds exactly as the originally recorded speaker's voice except that he is now speaking much faster or much slower. There is no change in pitch or tonal quality. This process is the function of the Eltro Information Rate Changer, the heart of the Infotronic System. While you may certainly use the Eltro Rate Changer for direct tape playback, that is a most unlikely use of it. The compressed or expanded material is commonly recorded on another tape recorder after which you are free to duplicate the material in the usual way either through tape duplicator use or by transferring to a disk for purposes of pressing large quantities of records. The Eltro unit, therefore, is not required in every playback situation, and one such unit can serve an entire school system, corporation or other information processing center. Besides serving as a processing device, the Eltro Rate Changer might well be used experimentally to determine the most efficient and effective rates of speech for a variety of given purposes.

A Quick Survey of Immediate Applications:

Education of the Blind

The American Foundation for the Blind and the Printing House for the Blind have successfully demonstrated the effectiveness of speeded speech to permit the blind person to more rapidly acquire that information which sighted persons read from the printed page. With the cooperation of the U.S. Library of Congress Division for the Blind, this use of compressed speech is significantly increasing. Through additional research and use, speedup percentages are already going up.

Dial Access Information System

A significant number of universities already have programs which provide lectures, special courses, etc. by dial access. A subscriber is able to dial a specific number and obtain prepared lecture material. The values of the new Eltro device are obvious. Reduction in access time combined with rapid scan and intensified retention are augmented by great financial and man-hour savings.

Rapid Tape Library Scan

Tape archives are considerably on the increase. While books can be leafed through and disc recordings can be scanned with a playback arm, the tape medium lends itself poorly to scanning or search. With the Eltro device, a speedup of two to three times makes rapid search access possible for the first time.

Management Training Course

There is already experimental evidence which indicates that management training courses, salesman indoctrination, review of board meetings and sales meetings, scanning of conferences with clients are all served more effectively through rapid scanning of re-recorded information rather than the usual cursory

perusal of a written report. In addition, costs and time of preparation are substantially reduced.

Speeded Sound Tracks for Film

Since the picture portion of motion pictures lends itself to more rapid projection without any problems, it is a relatively simple matter to speed up the accompanying sound track with the Eltro device, thus producing more rapid film playback without affecting sound quality or pitch. Projection of such film could be made "live" directly from a standard projector through the Eltro unit. (See article in Soc. of Mot. Picture & TV Eng. Journal, Sept. 1964.)

The Many Applications of Slowed Sounds

The Eltro device can be significantly useful in the teaching of heart sound analysis to medical students. The intricate multiple sounds hidden within a single heartbeat must become recognizable to medical students; the Eltro unit makes it possible without falsifying or changing the important tonal quality of the heart sound. In language teaching the Eltro makes it possible for the first time to reproduce foreign languages at slow speed in an accurate way not possible by simply pronouncing slowly.

This makes the device uniquely suited to pronunciation correction for students. They can easily select for themselves the exact amount of slow-down for their particular learning problem. The ability of the device to speed up or slow down without pitch change is accompanied by a companion ability to alter pitch without a tempo change. The extraordinary value of this unique ability to alter pitch applies not only to the teaching of music—instrumental and otherwise—but has already been applied to the solution of other problems, including the restoration of normal pitch to the voices of helium-breathing divers, the unscrambling of radio communications, etc.

REQUIREMENTS FOR ACTION

The tools of communications technology are here now. Infotronic Systems Inc. has engineered what is perhaps the unique breakthrough, creating not only new dimensions in time but benefits relating to comprehension, retention and efficiency.

But tools are valuable only when they are put to work solving problems. As with most technological breakthroughs, it remains for the practitioner—the user—to translate theory into practice; to innovate and benefit by technological advances. Accordingly, Infotronic Systems Inc. solicits the opportunity to relate this device and methodology to the direct application of your problems and needs.

We also invite your ideas and suggestions relating to future applications of this new technology as it relates to education, training or communications. Attached is a questionnaire which we hope can help us as developers and you as users to mutually benefit by the more thorough understanding and use of a new technology.

Respectfully yours,



STEPHEN F. TEMMER
Infotronic Systems Inc.